UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,895	12/17/2003	Alfred Permuy	LOM-35	4038

23599 7590 04/10/2007 MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201	EXAMINER PAUL, DISLER

ART UNIT	PAPER NUMBER
2615	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-4* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-4* is/are rejected.

7) ☒ Claim(s) *3* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All   b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date ___

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities:

In claim 3, please provide the definitions of the terms used in the formula.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1-4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Orieux et

al.("4,480,322") and Gilbert ("2002/0012289 A1").

Orieux et al. disclose a method of detecting and locating noise sources each emitting

respective signals Sj where j = 1 to M, detection being provided by means of acoustic wave or

vibration sensors each delivering a respective time-varying electrical signal si with i varying from

1 to N ("*fig.1-8; sensors at (R1-R3) to pick up varying time signals for respective signals waves*

at fig.1, so as to locate noise sources; for further info please see col.1 line 5-15"), the method

consisting:in taking the time-varying electrical signals delivered by the sensors, each signal si(t)

delivered by a sensor being the sum of the signals Sj emitted by the noise sources ("*fig.1(R1-*

R2); fig.2(21,22) ; varying- time signals pick up by the sensors and further col.2 line 54-58"); in

amplifying and filtering the taken time-varying electrical signals in digitizing the electrical signals

("_col.4 line 30-35; fig.3(34), the varying time signals to be amplified and filtered_").

While Orieux et al. disclose of the above limitation with correlation in finding the locations

of sound source, he fail to disclose of the specific calculating the functional

$$f(n_1\ldots\ldots n_N) = \sum_{k \neq 1} R_{K1}$$

with the coefficients Rkj being a function of the vectors nj giving the directions of the noise

sources; and in minimizing the functional f in such a manner as to determine the directions nj of

the noise sources.

However, Gilbert et al. disclose of a multidimensional beamforming device with

array sensors in which he disclose of the calculating the functional

$$f(n_1\ldots\ldots n_N)' = \sum_{k \neq 1} R_{K1}$$

with the coefficients Rkj being a function of the vectors nj giving the directions of the

noise sources; and in minimizing the functional f in such a manner as to determine the

directions nj of the noise sources ("_fig.29,fig.30 (766-770); page 1[0009]_") for the purpose of

isolating/detecting signals sources traveling at particular directions. Thus taking the combine

teaching of Orieux and Gilbert et al. as a whole, it would have been obvious for one of the

ordinary skill in the art to modify Orieux by incorporating the technique of Gilbert et al. of the

calculating the functional

$$f(n_1\ldots\ldots n_N) = \sum_{k \neq 1} R_{K1}$$

with the coefficients Rkj being a function of the vectors nj giving the directions of the noise

sources; and in minimizing the functional f in such a manner as to determine the directions nj of

the noise sources for the purpose of isolating/detecting signals sources traveling at particular

directions as taught by Gilbert et al.

Re claim 2, the combined teaching of Orieux and Gilbert et al. as a whole,

disclose the method according to claim 1, wherein, in order to minimize the functional f, the

method consists in calculating the Fourier transforms of the signals si(t) delivered by the

sensors ("*Gilbert, col.12 [0145] line 13-17*") and further disclose of the correlation coefficient

and source vectors *("see, Gilbert, fig.28-30")*;

However, the combined teaching of Orieux and Gilbert et al. as a whole, fail to disclose

of the specific formula for minimizing the function which is the coefficients being specifically:

$$R_{ij} = \frac{\int_{-\infty}^{+\infty} |Si(w)|^2 * |Si(w)|^2 \, dw}{\int_{-\infty}^{+\infty} |Si(w)|^2 \, dw * \int_{-\infty}^{+\infty} |Sj(w)|^2 \, dw}$$

But, Official Notice is taken that the specific above formula of calculating Coefficient is

commonly known in the art, thus it would have been obvious for one skill in the art to modify the

teaching of Orieux and Gilbert et al. as a whole, by incorporating the specific coefficient formula

$$R_{ij} = \frac{\int\limits_{-\infty}^{+\infty} |Si(w)|^2 * |Si(w)|^2 \, dw}{\int\limits_{-\infty}^{+\infty} |Si(w)|^2 \, dw * \int\limits_{-\infty}^{+\infty} |Sj(w)|^2 \, dw}$$ for the purpose of minimizing the functional f.

Re claim 3, in regard to the correlation coefficient Rij being : $R_{ij} = \dfrac{\int\limits_{-\infty}^{+\infty} \Gamma_{ij}^{2}(\tau) \, d\tau}{\int\limits_{-\infty}^{+\infty} \Gamma_{ij}(0) * \Gamma_{ij}(0)}$

Has also been analyzed and rejected with respect to claim 2.

Re claim 4, similarly in regard to particular formula of S(w)=(T* X T)^(1)

XT*XS(W) for performing minimization, Official Notice is taken that the formula is

commonly known in the art , thus it would have been obvious for one of ordinary skill in

the art to modify the teaching of Orieux and Gilbert as a whole, by incorporating the

formula for the purpose of performing minimization.

Conclusion

5.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

The following prior arts disclose of noise sources with array sensors for determining the noise source location: Marash et al.("6,594,356 B1") and Feng et al.("2001,0031053 A1") and Rountree ("4,283,767") and Krikorian et al.("2003,0169202A1") and ("2004/0032796 A1").

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-272-2222. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DP

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600